

SURVEYORS FIELD

Manual

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Surveyors
Field

BURG

Software & Service
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1. Program description

With **Surveyors Field** you have a efficient tool for your daily work. You can register the raw data as well as additional Attributes like the instruments height.

All the text applied to this application is stored in language Files that and can be modified.

All screen shots were taken on a personal Computer version of the application, therefore they can differ some from the PDA version.

1.1. Conditions

Within the scope of this manual we do not describe basic functions of your PDA's the operating system. We assume you are already familiar with that. We only want to give some hints, whenever **Surveyors Field** needs special settings.

2. Installation

This application comes pre installed on your PDA. In case that the installation gets lost please recover it by simply copying the whole root folder back to your PDA.

Because on some devices, all the internal stored data gets lost in case of a hard reset, we recommend to use external storage cards like CF card's or SD card's to save your project data. Please take note, that these storage media are not included on delivery.

3. Surveyors Field Data Structure

Surveyors Field comes with the *surveyors.exe* an the *feld.ini* file in the root directory. It has four subdirectories were all data is stored.

3.1. Directory PROJEKTE

Here the project Data ist stored. The file structure is based on XML. Each project has it's own file and all the registered information is stored in it.

3.1.1. The TACHYMETER directory

The driver files for the different TACHYMETER devices are stored here. In addition you may find the file *messgeraet.ini*. This configuration File can store additional device parameters, it's an optional feature and is not part of the standard installation.

3.1.2. The VORLAGEN directory

This directory contains template files to make your day work more comfortable. These files are ASCII-files without extensions. You can create lists of frequently used items in here. If you define templates, they occur as pull down lists.

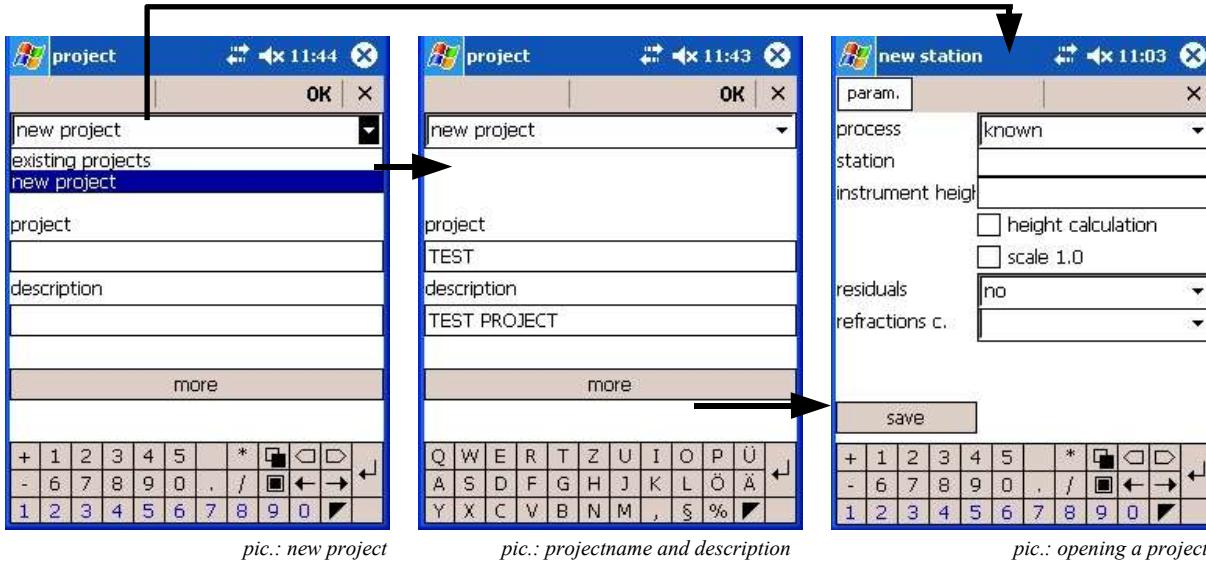
At the moment the following lists are supported:

bemerkungen	list of remarks
laengs	list of lengths wise eccentricities
quer	list of transverse eccentricities
reflektorhoehen	list of reflector heights
refraktionskoeffizient	list of refraction coefficient

If the needed value is not part of a list, just enter the value anyway - the list will not be expanded.

4. Using Surveyors Field

After starting the **Surveyors Field** application you enter the start screen. You can choose between two options: 'existing project' – opens a project you already worked on before and 'new project' – starts a complete new project.

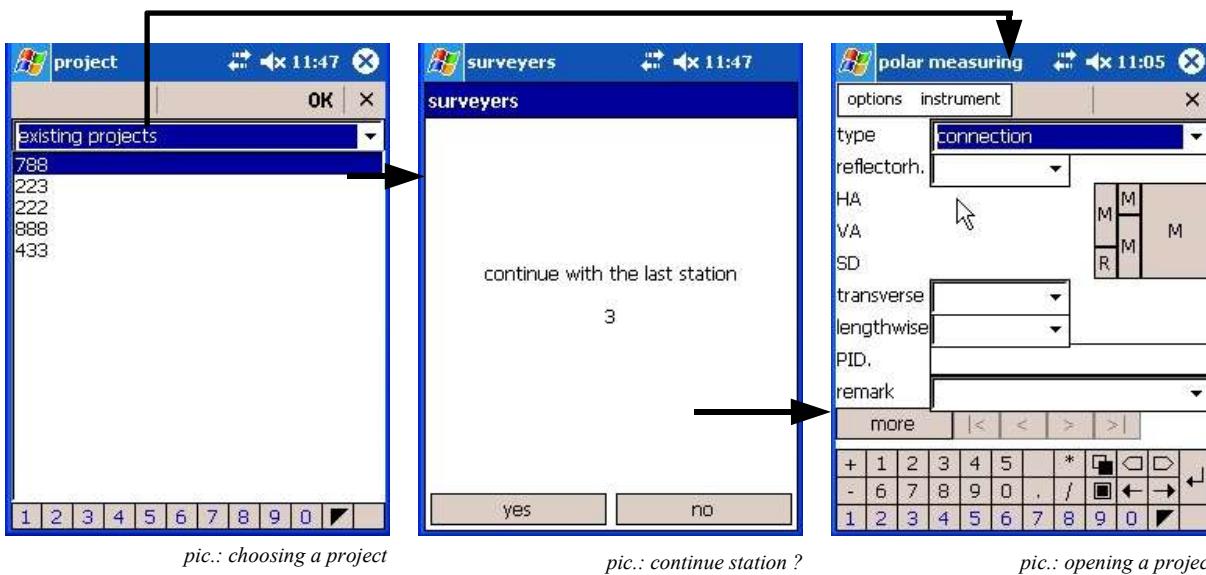


After choosing 'new project' you will be asked for the project name and an optional project description. Enter these data and the "more" button and you will enter the dialogue for a new station.

If you want to open an already existing project, just pick it from the list and confirm with OK.

You can choose then, if you want to continue with the last station. If you answer yes, the dialogue continue after the last measurement opens.

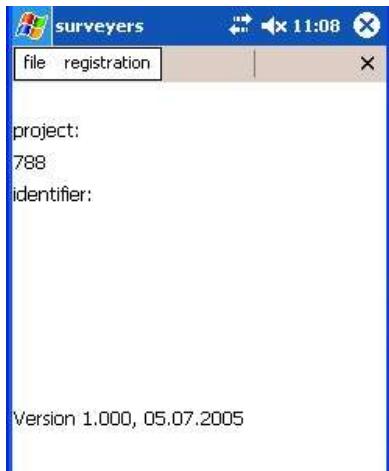
If you answer no, the dialogue to open a new station opens.



After closing the dialogue you get an overview about the actual project.

You will find the project name and description and information about the actual program version there.

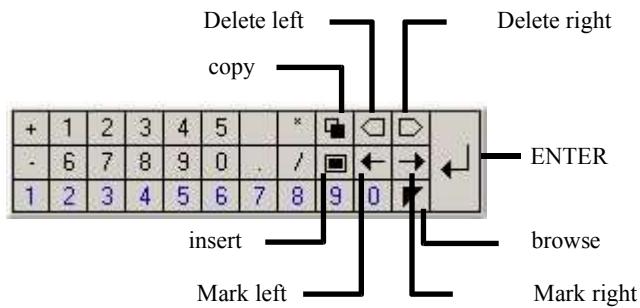
The registration menu has three entries: *new station*, *previous station* and *measure*.

pic.: *information*

4.1. Key navigation

Windows CE is designed to be controlled by a touch screen. Normally you use the passive touch screen. In some cases additional control could be helpful. For devices, that do come with keyboards we have designed a special key support, for other devices, we have developed a special software keyboard.

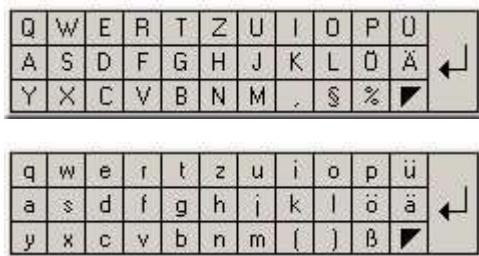
The software keyboard is shown on bottom of all dialogues were you have to enter data (on devices with landscape oriented screens – like for example the TRIMBLE ACU you will find it on the right side). The keyboard supports letters, numbers and the most used characters as well

pic.: *standard software keyboard*

With the *delete left* and *delete right* key you can delete the character left or right from the cursor position.

The *mark left* and *mark right* keys do mark single characters left or right from the cursor position. The *copy* key copies characters to the clipboard and *insert* copies it back to a dialogue box. In case that value is a point identifier, it might will be converted according to the setting of your configuration..

The software keyboard has three layers.



pic.: extendet keyboard

The first layer has blue digits and a small black triangle. You can add special function control to the blue digits by editing the *tasten.ini* file. Use the black triangle to browse through the different keyboard layers. On an Windows CE system with a portrait screen you should configure the task bar on bottom to be invisible, otherwise you cannot see the whole software keyboard.

4.1.1. The configuration file *tasten.ini*

The Keyboard access is configured by the configuration file: *tasten.ini*.

The format for a row is "0x<Key>=<0xKey>/<Event>"

A Key 0x00FFFFxx sends an ASCII-Codes to the Input (example 0x00FFFF56 in case of V).

Event	Effect
HAUPTFENSTER	Calls the main window to the foreground
MESSUNG	Activates the measurement of HA, VA, SD first and may generates a point identifier afterwards according to the point settings.
MESSUNG-HZ, MESSUNG-VZ, MESSUNG-HZVZ, MESSUNG-VZSD, MESSUNG-HZVZSD	Activates the specified measurement where HZ means HA and VZ means VA.
POSITION	Activates positioning (must be supported by the device)
REFLEKTOR	Changes between Reflector and reflectorless
LAGENWECHSEL	Activates a change face
LIBELLE	Shows the drivers surveyors level
JOYSTICK	Shows the drivers positioning
MESSGERAET	Changes from the registration window to the driver window
LASERPOINTER	Activates the laserpointer (mus be supportet by the device)
POSITIONSLICHT	Position light
SUCHE	Reflector search
SUCHPARAMETER	Parameters for reflector search

Table: Keyboard events by *tasten.ini*

You can read the keycodes with the optional Program keywatch.exe.

Example by Q-200:

```
; Key replacements
0x00000088=0x0000001B      ->      gelb links wird zu ESC
```

```
; Key events
0x01000088=REFLEKTOR      -> CTRL + yellow left
0x00000089=MESSUNG         -> yellow right
0x01000089=MESSUNG-HZ     -> CTRL + yellow right
```

Example by Leica Allegro CX:

```
; Key events by Leica Allegro CX
; 03/2005

; Key replacements

; Key events

0x00000070=LIBELLE          ; F1
0x00000071=LAGENWECHSEL    ; F2
0x00000072=MESSGERAET       ; F3
0x00000073=REFLEKTOR        ; F4
0x00000074=MESSUNG          ; F5
0x00000075=                ; F6
0x00000076=JOYSTICK         ; F7
0x00000077=HAUPTFENSTER     ; F8
0x00000078=LASERPOINTER    ; F9
0x00000079=MESSUNG-HZ      ; F10
```

4.2. Command line parameters

Surveyors Field interprets additional arguments from the command line in this way:

Program-name /system argument -Argument

Most of this arguments are used with the PC-version of the application but some can be useful on the field version. The system argument */landscape* shows **Surveyors Fields** in landscape mode. The system argument */wex* extends all dialogues of the PC Windows version.

The *-projekt* argument prevents the project list to pop up on start. The argument *-projekt <Projektname>* loads „Projektname“ immediately.

You can collect more arguments in the argument file. The argument file must have the same name like the program. The file extension must be *-arg*. The file must have a XML structure, where the root node name must be the program name (without extension).

In this example the root node is *logger*. The systemarguments are located in the *System* node. This example shows how a language file is to be used with the program.

Example Of An Argument Fiel For The Surveyors Field:

```
<logger>
  <System>
    <language>sprache\logger-en-en.txt</language>
  </System>
</logger>
```

The driver programs do work in the same manner.

4.3. Opening, saving and closing a project

File *new* creates a new project file. File *open* opens an already existing project. To use the File open or File new commands, you first have to close an open project you currently may work on.

The File *save* command saves the taken changes to the project but keep the project open. The File *close* command saves the changes and closes the project as well.

If you want to change the current project, please close the actual opened project first and open the other one afterwards. To create a new project please act in the the same order. First close an actual opened project and create a new one with the File new command afterwards.

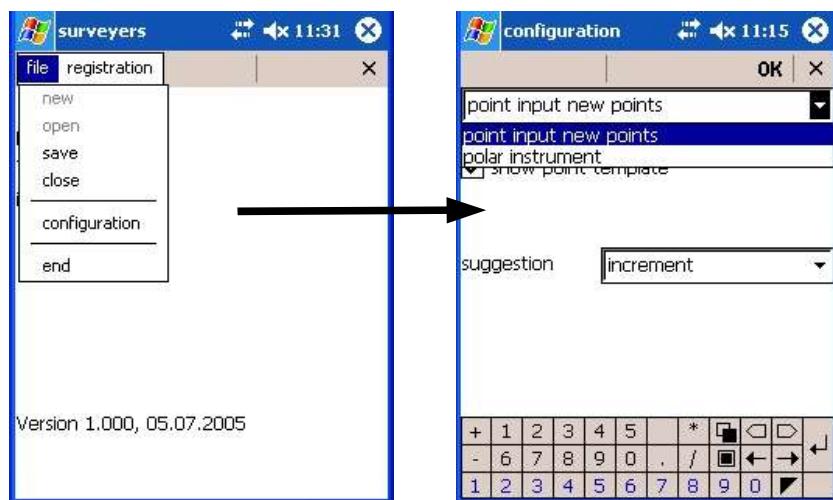


pic.: file menu

After the File *close* command **Surveyors Field** asks once more if you really want to close the application.

4.4. Configuring Surveyors Field

All the configuration setting of **Surveyors Fields** are taken in the *file>configuration* menu.



pic.: configuration menu

The configuration dialogue has two entries for the *point input* settings and the *polar instruments* driver settings. Choose one of these two entries from the list.

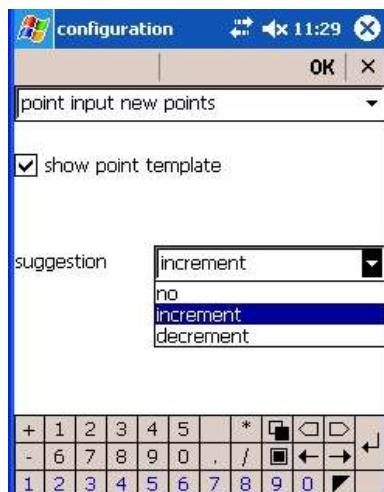
4.4.1. Configuration for point input and new points

This configuration matches the four stationing types *local*, *free*, *known* and *single point solution* as well as the measure type *new point* from the measure dialog.

After you have once entered a point identifier in the *new station* or *measure* dialogues, you can get an automatic suggestion for the next identifier just by leaving the point identifier (PID) field. Entering a '+' will increase the last value by one, entering a '-' will decrease it by one.

If the *show point template* option is activated, you will be suggested a PID for every new point.

If you choose *no* from the suggestion list, you will not get any suggestion for new points.



pic.: configuration for points

If you choose *increment* you will get the suggestion for the next larger number, if you choose *decrement* you will get the suggestion for the next lower number. These suggestions do always count by one. Whenever you click *save* or *more* you will see the suggested number and you can modify it or keep it by pressing the same key again.

Please note, that the decrement setting will not offer negative numbers. If no number can be found, you get a message and have to enter the next number yourself.

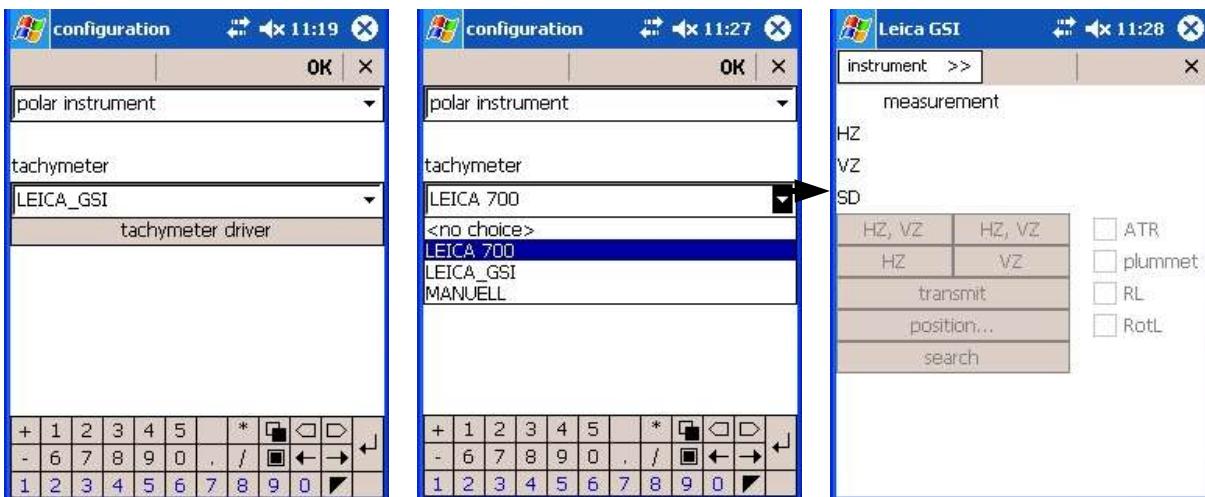
The maximum number of digits in a suggested point identifier is 15.

4.4.2. Configuration – polar instrument

To access an instrument, you first have to choose it from the *tachymeter* list. You will find this list in the configuration menu – polar instrument.

Press the *tachymeter driver* button if you want to control or alter the driver settings.

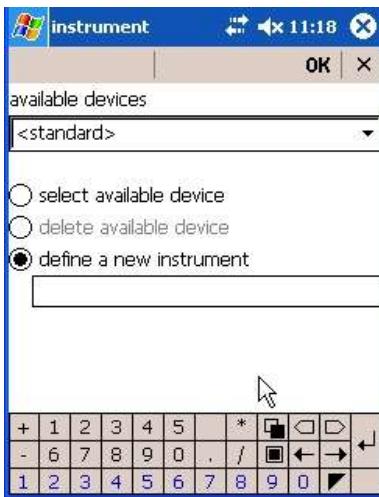
You can enter all settings of an *tachymeter* instrument in the device menu of the driver program. Depending on the chosen device, the driver offers different settings in the menu. To activate the device, please set the active flag in the *instrument* menu of the device driver.



pic.: driver configuration – here: Leica GSI

You can save different communication parameter sets for a device under the entry *instrument* of the menu *instrument* of the device driver. You can specify a new name for the actual instrument settings and save them here.

As the default setting you will find the name *Standard*. You can define further setting by activation the option *define new instrument*. Enter a name for the setting – for example the instruments serial number. You can use



pic.: defining a new instrument name

spaces, all letters will be converted into capital letters. To save the configuration press [OK] from the upper left side of the dialogue the new set will appear immediately in list of the available devices.

You can also delete the device configuration by choosing the *delete available device* option and confirm with the [OK] button but not the *standard* device.

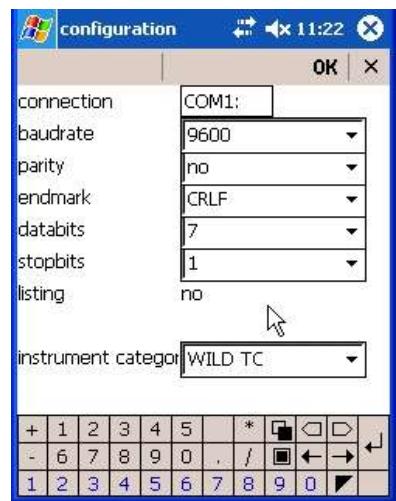
The communication settings are taken in the *instrument>configuration* menu. Enter the values according to your instrument in here. If an instrument does not support different communication parameters, the driver does not allow to take changes. Only the connection port is accessible then.

Enter the name of the serial port of your field device in the field *connection*. Possible values are COM1: or COM4:.

Please enter the : as well! For example: COM1: or COM4: .



Pic.: german PC version - Topcon



Pic.: Wild TC

pic.: configuration of connection parameters

You can enter the : by entering two single points one after another!

The *messgeraet.ini* file under the ...\\tachymeter directory stores the last used driver, the last used instrument and the serial connection port under the section [Allgemein]. The values of *baudrate*, *parity* and *endmark* are stored into one own section for each instrument.

Example:

```
[ALLGEMEIN]                                     <-- Standard for all instruments
TREIBER=LEICA_GSI
NAME=
COMPORT=COM1
```

```
[LEICA_GSI]                                     <-- special definition for one instrument
BAUDRATE=9600
PARITAET=KEINE
ENDMARKE=CRLF
```

```
[LEICA_GSI.123456]
BAUDRATE=19200
PARITAET=KEINE
ENDMARKE=CRLF
```

In the list for the device selection only the last part after the 'point' of an instruments name appears. In the list of our example for the [LEICA_GSI.123456] device only the last part, the numer 123456 will appear.

Please note: To get access to an instrument, set the *active* flag in the *instrument* menu!

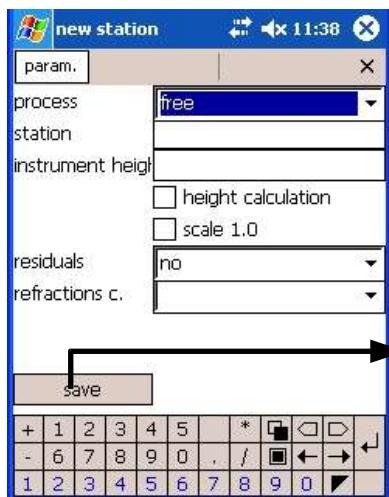
Instrument>end leaves the driver and terminates the program.

4.4.3. The menu param. (Parameter)

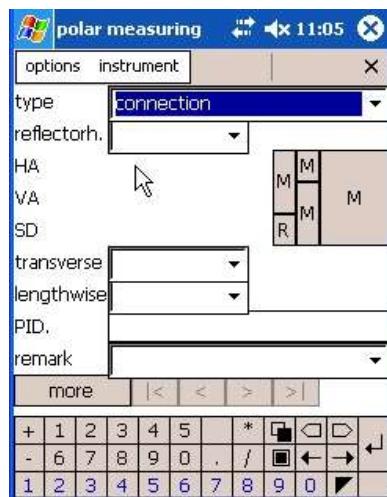
The *new station* has the param. entry. Here you have direct access to the configuration menu.

4.5. Polar

Each time you open a new project, **Surveyors Field** starts the *new station* dialogue. You can choose between different processes like free station or known station, you can enter an instruments height and choose other parameters here. Afterwards you always enter the *polar measuring* dialogue, where you choose the measure type, enter a reflectors height and remarks.



pic.: dialog 'new station'



pic.: Dialog 'polar measuring'

If you start an already existing project with **Surveyors Field** you will be asked to continue the last station. If you choose yes, the last station will be continued by opening the polar measuring dialogue. Otherwise you have to open a new station.

After closing the *polar measure* dialogue with the **X** button you get into the main menu. From here you can access the registration menu to open a new station, continue the last station or measure.



pic.: registration menu

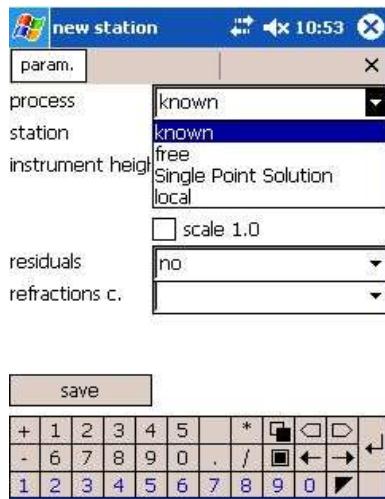
4.5.1. Dialogue 'new station'

You can choose between four types of processes.

These are:

	process	
known	Known station	
free	Free station	
single point solution	Single point solution	Only angles are measured
Local	Local station	Known local station with coordinates: R = 0.0, H = 0.0 should be used in local systems only!

Table.: Polare processes



pic.: Dialog 'new station'

To enable height calculation you must enter the instruments height !

You can enter further options like residuals, scaling and refractions coefficient here.

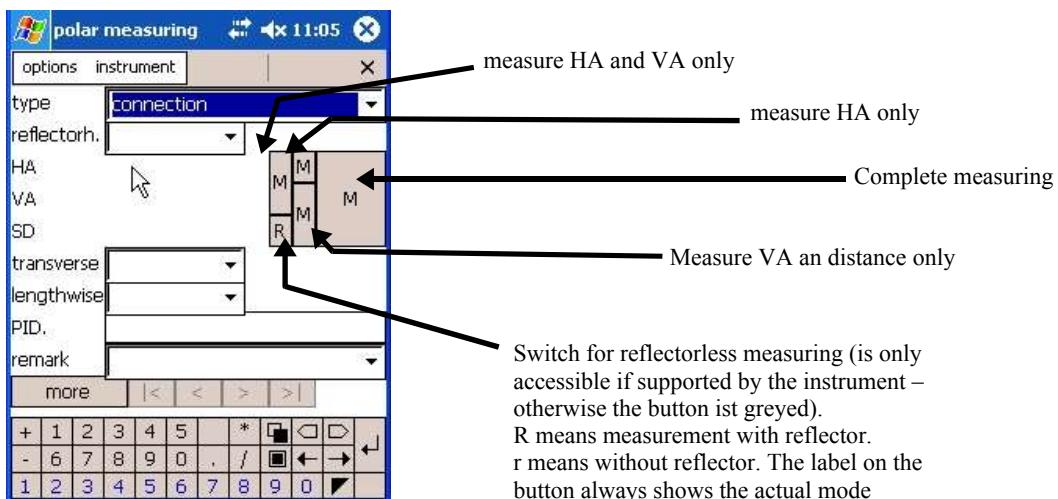
After you entered a point number you can change to the *polar measuring* dialogue with the *save* button then.

4.5.1.1. Polar measurement

Within this dialogue you have to choose the measuring type first. In case of the type *grid nord*, you only have to enter a horizontal angle, the other data fields are deactivated. Though the data fields to be entered depend on the type of measuring you choose.

The different sized buttons have special meaning. All buttons with 'M' label do activate a measurement. Depending which rows are covered by a button, he activates different kinds of measuring: The elements HA, VA or SD. On the left side of the dialogue you will find the three labels HA, VA and SD. Follow the rows to the right side and you will find the buttons that activate the measurement (see next picture).

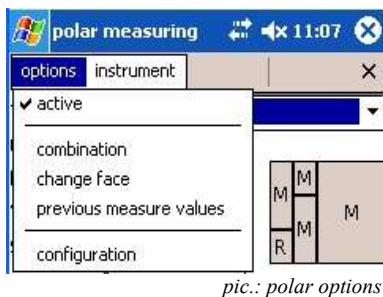
The other data fields are to store eccentricities and the reflectors height. In addition to enter the values, you can create templates for these values in the ...\\Vorlagen directory. If you already have defined templates, you can enter a value in two ways: Enter the value by Keyboard or pick it from a list, that comes from your template definition.



pic.: Polar measuring

You can enter a remark to every point. You can even pick a remark from a list, if you have defined a template before. The 'more' button saves and continues with the next measuring point. The mask will be cleared, but the last type and remark are suggested for the next point.

The *options* menu offers further settings.



The Menu entry *active* toggles the actual measuring from activated to deactivated and back. The standard is *active* this is shown as checked.

The menu entry *combination* lets you merge two measured values as one (for example first the distance, then the direction).

Each part of a combination measuring will be displayed in a line above as *combination 1. measuring* and *combination 2. measuring*. The *more* button activates the second measuring.

You can gather more measurements with the **[>]** button. Finally the *more* button combines all measurements into one.

Please note that only the finally combined measurement will be stored !

pic.: combination 1. measuring

pic.: combination 2. measuring

pic.: combination is complete

The menu entry *change face* is only available, if you have a motorized instrument. It completes a automatic change face.

The *previous measure values* entry displays the values of the last measured data.

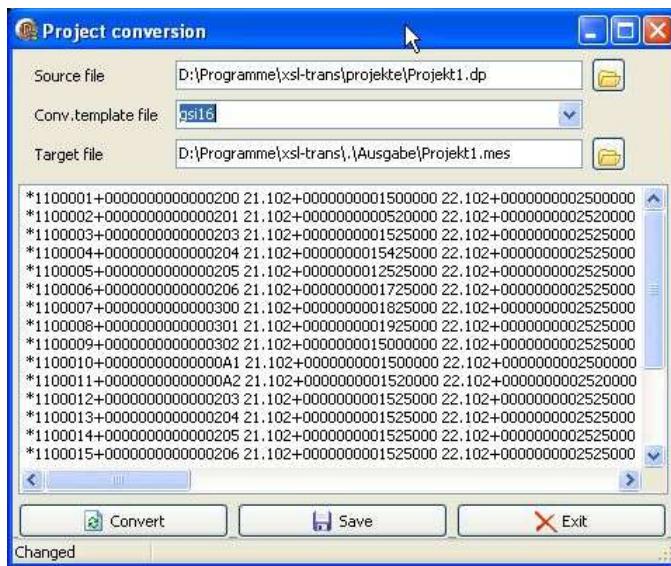
The *configuration* entry opens the configuration menu were you can enter modifications. (see also chapter 4.4, Configuring Surveyors Field, page 12ff.)

5. Data transfer and conversion

Surveyors Field stores all project data into XML based project files. The default file extension is 'DP'. The project files are located in the *projekte* directory. To copy the project files to a workstation computer, use an actice sync connection with your field computer.

You can process the project files with applications, that support XML data structures. We do provide a XML conversion program **XMLKonvert.EXE** that works under Windows XP operating systems and needs the MSXML extension provided by microsoft.

To install **XMLKonvert** copy all the distributes files and folders to your workstation computer keeping the original file names and folder names. The way how **XMLKonvert** works is simple. Start it by double clicking on the **XMLKonvert.exe** file.



pic.: XMLkonvert.EXE

XMLKonvert needs a project file as source file, a XLS transformation file with transformation instructions and produces an output file you specify with the target file file selector. Select all the needed files first and press the *convert* button then. You will see the result in the editable text field in middle of the program mask. You can modify the result then and save it to the specified target file with the *save* button. To exit **XMLKonvert** press the *exit* button.

If you need other target file formats than delivered with the program, you can create new XSL transformations (XSLT) to convert the measuring data into the structure you need. You will find more information about XSLT on many webpages for example on <http://www.w3.org/Style/XSL/>.

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